CLAIMS

What is claimed is:

1. A method for detecting the presence of a signal on one of at least two frequency channels in a frequency translating repeater for use in wireless local area network (WLAN) operating according to a protocol, the method comprising:

establishing a first threshold associated with a first of the at least two frequency channels and a second threshold associated with a second of the at least two frequency channels;

monitoring the first and second frequency channels to detect the signal thereon in accordance with a first detection mode including the first threshold and the second threshold; and

qualifying, if the signal is detected, to determine whether the detected signal is a wanted signal or an unwanted signal.

2. The method according to claim 1, wherein the establishing the first and the second thresholds includes establishing the first and the second thresholds using a saw tooth process.

3. The method according to claim 1, further comprising adding a delay to the signal after the signal is detected, and wherein a detection bandwidth associated with the monitoring is less than a group delay associated with the signal.

4. The method according to claim 3, wherein the delay is less than a timeout parameter associated with the protocol.

5. The method according to claim 1, further comprising refining the first threshold and the second threshold if no signal is detected.

6. The method according to claim 1, wherein the first detection mode includes an analog detection mode.

7. The method according to claim 1, further comprising recording information associated with the detected signal in an event log if the detected signal is determined to be the unwanted signal.

8. The method according to claim 7, further comprising disabling a transmission of the signal if the detected signal is determined to be the unwanted signal.

9. The method according to claim 7, further comprising refining the first and the second threshold using the recorded information

10. The method according to claim 1, further comprising monitoring the first and second frequency channels to detect a signal thereon in accordance with a second detection mode including the first threshold and the second threshold when the detected signal is detected.

11. The method according to claim 10, wherein the second detection mode includes a digital detection mode.

12. The method according to claim 1, further comprising overriding the first detection mode with a second detection mode.

13. The method according to claim 1, wherein the qualifying includes:

starting a timer to measure an elapsed time associated with the detected signal if the detected signal is determined to be the wanted signal; and

enabling a transmission of the detected signal in accordance with an override mode.

14. The method according to claim 13, wherein the starting the timer includes:

determining if the elapsed time is greater than a minimum value; and

refining a first criteria if the elapsed time is greater than the minimum value and a second criteria if the elapsed time is not greater than the minimum value.

15. The method according to claim 14, wherein the minimum value includes a minimum packet duration.

16. The method according to claim 14, wherein the first criteria includes an end of packet criteria and the second criteria includes an unwanted signal criteria.

17. The method according to claim 13, wherein the starting the timer includes:

determining if the elapsed time is greater than a maximum value; and

refining a criteria if the elapsed time is not greater than the maximum value and disabling the transmission if the elapsed time is greater than the minimum value.

18. An apparatus for detecting the presence of a signal on one of at least two frequency channels in a frequency translating repeater for use in wireless local area network (WLAN) operating according to a protocol, the apparatus comprising:

a radio frequency interface;

a processor; and

a memory coupled to the processor and the radio frequency interface, the memory containing instructions for causing the processor to:

establish a first threshold associated with a first of the at least two frequency channels and a second threshold associated with a second of the at least two frequency channels;

monitor the first and second frequency channels to detect the signal thereon in accordance with a first detection mode including the first threshold and the second threshold; and

qualify, if the signal is detected, to determine whether the detected signal is a wanted signal or an unwanted signal.

19. The apparatus according to claim 18, wherein the instructions further cause the processor, in establishing the first and the second thresholds, to establish the first and the second thresholds using a saw tooth process.

20. The apparatus according to claim 18, wherein the instructions further cause the processor to add a delay to the signal after the signal is detected, and wherein a

detection bandwidth associated with the monitoring is less than a group delay associated with the signal.

21. The apparatus according to claim 20, wherein the delay is less than a timeout parameter associated with the protocol.

22. The apparatus according to claim 18, wherein the instructions further cause the processor to refine the first threshold and the second threshold if no signal is detected.

23. The apparatus according to claim 18, wherein the first detection mode includes an analog detection mode, not involving the processor directly.

24. The apparatus according to claim 18, wherein the instructions further cause the processor to record information associated with the detected signal in an event log if the detected signal is determined to be the unwanted signal.

25. The apparatus according to claim 24, wherein the instructions further cause the processor to disable a transmission of the signal over the radio frequency interface if the detected signal is determined to be the unwanted signal.

26. The apparatus according to claim 24, wherein the instructions further cause the processor to refine the first and the second threshold using the recorded information

27. The apparatus according to claim 18, wherein the instructions further cause the processor to monitor the first and second frequency channels to detect a signal thereon

in accordance with a second detection mode including the first threshold and the second threshold when the detected signal is detected.

28. The apparatus according to claim 27, wherein the second detection mode includes a digital detection mode.

29. The apparatus according to claim 18, wherein the instructions further cause the processor to override the first detection mode with a second detection mode.

30. The apparatus according to claim 18, wherein the qualifying includes:

starting a timer to measure an elapsed time associated with the detected signal if the detected signal is determined to be the wanted signal; and

enabling a transmission of the detected signal in accordance with an override mode.

31. The apparatus according to claim 30, wherein the instructions in causing the processor to start the timer further cause the processor to:

determine if the elapsed time is greater than a minimum value; and

refine a first criteria if the elapsed time is greater than the minimum value and a second criteria if the elapsed time is not greater than the minimum value.

32. The apparatus according to claim 31, wherein the minimum value includes a minimum packet duration.

33. The apparatus according to claim 31, wherein the first criteria includes an end of packet criteria and the second criteria includes an unwanted signal criteria.

34. The apparatus according to claim 30, wherein the instructions in causing the processor to start the timer further cause the processor to:

determine if the elapsed time is greater than a maximum value; and

refine a criteria if the elapsed time is not greater than the maximum value and disabling the transmission if the elapsed time is greater than the minimum value.

35 The apparatus according to claim 18, further comprising an IF unit, capable of down-converting the signal on an RF band and selecting one of the first and the second frequency channels for transmission.

36. The apparatus according to claim 35, wherein the IF unit is configured to filter the down converted signal.

37. The apparatus according to claim 35, wherein the IF unit is configured to add a delay to the down converted signal during a period the signal is not detected and prior to enabling a transmission.

38. The apparatus according to claim 18, further comprising a detection unit associated with each of the at least two frequency channels.

39. The apparatus according to claim 38, wherein the detection unit includes at least one of: a diode detector at an intermediate frequency (IF), a diode detector at a

base band frequency, a matched filter at the IF, a matched filter at a radio frequency (RF).

40. The apparatus according to claim 38, further comprising a converter to digitize the signal to form a digitized signal and wherein the detector unit is further configured to detect the digitized signal.

41. The apparatus according to claim 38, wherein the detection unit is further configured to:

compare a power level associated with the signal;

monitor the signal over a time interval to determine a noise estimate; and

comparing the current signal power to this estimate as part of the detection process.

42. The apparatus according to claim 18, wherein the instructions in causing the processor to qualify, further cause the processor to:

monitor the signal for a first period of time when the signal is above one of the first and the second thresholds; and

integrate the signal for a second period of time prior to comparing the signal to the first and the second thresholds.

43. The apparatus according to claim 42, further comprising a converter for converting the signal to form a digitized signal, and wherein the instructions in causing the processor to monitor and integrate, further cause the processor to monitor the digitized signal and integrate the digitized signal.

44. The apparatus according to claim 42, further comprising a converter for converting the signal to form a digitized signal, and wherein the instructions in causing the processor to monitor and integrate, further cause the processor to monitor the signal and the digitized signal and integrate the signal and the digitized signal.

45. The apparatus according to claim 37, further comprising a surface acoustic wave (SAW) filter and wherein the delay is added using the SAW filter.

46. The apparatus according to claim 41, wherein the detection unit is further configured to monitor the noise level of both of the at least two frequency channels at the same time.

47. The apparatus according to claim 41, further comprising a converter, and wherein the detection unit is further configured to monitor the noise level by under-sampling the converter.